PATENT COOPERATION TREATY

PCT

TRANSLATION INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0000055153		FOR FURTHER ACT	TION	See Form PCT/IPEA/416		
International application No. International		International filing date	day/month/year)	Priority date (day/month/year)		
PCT/EP2004/014071 10.13		10.12.2004		12.12.2003		
Internation	onal Patent Classification (IPC) or	national classification and IPC	2			
C083	C08J9/16, C08J9/14					
Applican BASI	f AKTIENGESELLSC	HAFT				
1.	1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.					
2.	This REPORT consists of a total of	of 6	sheets, includin	g this cover sheet.		
3.	This report is also accompanied b	y ANNEXES, comprising:				
	a. (sent to the applicant of	and to the International Bured	u) a total of 2	sheets, as follows:		
	IXI		_	amended and are the basis for this report and/or ale 70.16 and Section 607 of the Administrative		
	I I		-	nsiders contain an amendment that goes beyond I in item 4 of Box No. I and the Supplemental		
	b. (sent to the Internation	nal Bureau only) a total of (in-	dicate type and number	er of electronic carrier(s))		
				, containing a sequence listing and/or tables		
	related thereto, in comp Section 802 of the Admi	•	ndicated in the Supple	emental Box Relating to Sequence Listing (see		
4.	This report contains indications re	lating to the following items:				
	Box No. I Basis of	the report				
	Box No. II Priority					
	Box No. III Non-est	ablishment of opinion with re	gard to novelty, inven	tive step and industrial applicability		
	Box No. IV Lack of	unity of invention				
	BON I.O. V	d statement under Article 35(and explanations supporting	-	elty, inventive step or industrial applicability;		
	Box No. VI Certain	documents cited				
	Box No. VII Certain	defects in the international app	plication			
	Box No. VIII Certain	observations on the internatio	nal application			
Date of submission of the demand D			te of completion of th	nis report		
Name and mailing address of the IPEA/EP			thorized officer			
Faccimila No.			lanhana Na			

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Box	No. I	I Basis of the report		
1.		h regard to the language, this report is based on the internati cated under this item.	onal application in the language in	which it was filed, unless otherwise
		This report is based on translations from the original langum which is the language of a translation furnished for the pur international search (Rule 12.3 and 23.1(b)) publication of the international application (Rule 12.	poses of: 4)	·
2.	rece	international preliminary examination (Rule 55.2 and hargard to the elements of the international application, this eiving Office in response to an invitation under Article 14 at report): the international application as originally filed/furnished the description:	s report is based on (replacement :	
				as originally filed/furnished
		pages*		_
		pages*	_ received by this Authority on	
		the claims:		
		nos. <u>6,7</u>		as originally filed/furnished
		nos.*		13.10.2005 with letter
		nos.* <u>1–5</u>		
		nos.*	_ received by this Authority on	
	Ш	the drawings:		
		sheets		as originally filed/furnished
		sheets*		
	_	sheets*	received by this Authority on	
	Ш	a sequence listing and/or any related table(s) – see Suppler	mental Box Relating to Sequence L	isting.
3.		The amendments have resulted in the cancellation of:		
		the description, pages		
		the claims, nos.		
		the drawings, sheets/figs		
		the sequence listing (specify):		
4.		This report has been established as if (some of) the amen they have been considered to go beyond the disclosure as t	dments annexed to this report and	l listed below had not been made, since
		the description, pages		
		the claims, nos.		
		the drawings, sheets/figs		
		the sequence listing (specify):		
		any table(s) related to sequence listing (specify):		_
*	If ite	em 4 applies, some or all of those sheets may be marked "sup	perseded."	

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, invicitations and explanations supporting such statement		ticle 35(2) with regard to novelty, inventive step or industrial applicability; porting such statement			
1.	Statement				
	Novelty	(N)	Claims	1-5	YES
	Inventive	e step (IS)	Claims	1-5	YES
	Industria	l applicability (IA)	Claims	1-5	YES
2.	Citations and	d explanations (Rule 1	70.7)		
2.	1			kes reference to the following	
	<u> </u>	documents		Keb reference to the rollowing	
		aocamenes	•		
		D1: PATE	NT AB	STRACTS OF JAPAN vol. 2002, no. 12,	
				er 2002 & JP 2002 226622 A (HITACHI	
				TD), 14 August 2002	
				5 126 (BASF AKTIENGESELLSCHAFT) 12	
			1999	,	
		_		62852 A1 (CHAUDHARY BHARAT I ET AL)	
			ugust		
			2		
	2	D1 descri	.bes e	xpandable particles based on	
		acrylonit	rile-	styrene copolymers with different	
		molecular	weig:	hts.	
		However,	D1 do	es not appear to describe either a	
		mixture o	f sty	rene copolymers and standard	
		polystyre	ne or	the weight average molecular	
		weights c	laime	d in the present main claims.	
		The subje	ct ma	tter of the present main claims 1, 4	
		and 5 the	refor	e appears to be novel over D1 (PCT	
		Article 3	3(2))		

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
3	D2 (claim 1; paragraphs [0018], [0019]) discloses
	expandable styrene particles based on styrene
	polymers with bimodal molecular weight
	distribution.
	D2 describes, as a starting compound, a mixture of
	styrene and possibly an additional comonomer, said
	mixture being initiated by two different
	peroxides. A mixture of styrene polymers having
	different chemical compositions, as claimed in the
	present claims, cannot be obtained by means of
	such a method.
	The subject matter of the present main claims 1, 4
	and 5 is therefore novel over D2 (PCT Article
	33(2)).
4	D4 (claims 1, 2; paragraphs [0096]-[0103])
	describes a method of producing expandable styrene
	polymer granules, said method having the following
	steps:
	a) producing a molten mixture of i) optionally
	smaller amounts of a styrene homopolymer or
	copolymer having a molecular weight of 2,000 to
	50,000 g/mol, ii) a styrene homopolymer or
	copolymer having a weight average molecular weight
	of 100,000 to 500,000 g/mol, and iii) a styrene-
	containing interpolymer;
l	

b) mixing in an organic blowing agent at a higher

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

temperature, and

c) cooling the expandable mixture, extruding through the die plate and pelletizing the extruded strand.

In order to arrive at the subject matter of the present claims 1, 4 and 5, a person skilled in the art would, however, have to select polymer i) as styrene copolymer and polymer ii) as standard polystyrene. Weight ratios as specified in the present claims are also not suggested by D4.

The subject matter of claims 1, 4 and 5 therefore appears to be novel over D4 (PCT Article 33(2)).

5 D4 is considered to be the closest prior art.

The distinguishing feature of the present claims 1 and 4 is considered to be the chemical composition and the weight distribution of the styrene polymers.

Since a technical effect of the present application in relation to D1 is not discernible, the objective problem to be solved is considered to be that of providing other expandable styrene polymer granules.

D4 explicitly describes exclusively mixtures of 50-60% by weight of a polystyrene homopolymer and 40-50% by weight of a polystyrene interpolymer

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement with an undefined molecular weight. Weight ratios as claimed in the present claims are used only in comparative example 3. None of the other prior art documents, either alone or in combination with the teaching of another document, even remotely anticipates the use of bimodal polystyrene mixtures as proposed in the present main claims. The subject matter of main claims 1, 4 and 5therefore involves an inventive step within the meaning of PCT Article 33(3).